Genetics

TRANSCRIPTIONAL REGULATION OF *BCL3*

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Perhaps the most critical tool in the regulation of antigen-stimulated T cells in the peripheral lymphoid organs and infected tissues is activation-induced cell death (AICD). This occurs when tolerogenic dendritic cells stimulate T cells. The T cell proliferates before it yields to apoptosis. However, in the presence of adjuvants the rate of T cell death decreases. What is the difference that allows those T cells to survive? Analysis of thousands of genes with Affymetrix Genechip reveals that expression of *BCL3* increases more than any other gene in the presence of adjuvants compared with expression in activation alone. This project is part of a larger effort to analyze the transcriptional regulation of *BCL3* in an attempt to identify transcription factors.

The promoter region 611 was studied with different enhancer regions to determine the importance of those enhancers in expression of the gene. The constructs were transfected into a T lymphocyte cell line from *Mus musculus*. Interleukin-9 (IL-9) was used to stimulate the transfected cells in BW5147 and a combination of PHA and PMA were used with the Jurkat cell line. The 611E3 enhancer region was chosen because it is one of the most highly conserved regions in the mouse and human locus. Transfections were done with the 611E3 and 611E4 regions that comprise 611E7. 611E3 had an effect on luciferase activity, and therefore expression of the gene, while 611E4 did

not. 611E3 was further analyzed, looking individually at the AP1 and AP4 sites of the region. Neither had any significant effect on the luciferase activity. In addition, deletions were performed on 611E3. Both 611E3I (109 bp) and 611E3M (81 bp) had high levels of luciferase expression. This is probably because these contain the CREB and KB sites.